

#38
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PATENT
Case No. 803 P 019

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:) Examiner: Mehrdad Dastouri
Hodgson et al.) Group Art Unit: 2623
Serial No. 08/879,322)
Filed: June 20, 1997)
For: MEASUREMENT OF)
FRUIT PARTICLES)

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Shannon Wallace
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Shannon Wallace 3/24/03
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APPELLANTS' REPLY BRIEF

Commissioner for Patents
Washington, DC 20231

Sir:

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The Examiner's Answer in the above captioned application was mailed on January 24, 2003.

No claims in the application have been allowed. All of the claims currently pending in the application, claims 1-10 and 12-20, have been rejected and are the subject of this appeal. Of those claims, claims 1, 10 and 12 are the only independent claims.

This Appellants' Reply Brief is directed to statements made and arguments raised in the Examiner's Answer. In the discussion to follow the statement made by the Examiner in his Examiner's Answer which is to be addressed in this Reply Brief will first be quoted followed by appellants' reply.

1

At page 2 of the Examiner's Answer, it is stated:

(2) **Related Appeals and Interferences**

The brief does not contain a statement identifying the related appeals and interferences which

will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

Page 1 of Appellants' Brief states:

"RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences."

2

At page 3 of the Examiner's Answer, it is stated that QUEISSER et al disclose an apparatus for measurement of the "fruit particles" (emphasis added). And, on page 18 of the Examiner's Answer it is further stated:

Regarding Appellants' argument on Page 5, that "QUEISSER et al does not even contain the words "fruit" or "fruit particles" within the four corners of the patent", the Examiner refers Appellants to the definition of "fruit" excerpted from Webster Dictionary as "a product of plant growth (as grain, vegetable, or cotton)". Considering present invention claim language reciting "measurement of fruit particles in cooked food products", QUEISSER et al teachings read (sic) the claimed invention. QUEISSER et al invention includes an optical characterization for grading food products and, in particular, potato products such as french fried potatoes (QUEISSER et al, Summary of Invention, Column 2, Lines 20-32)

It should be further noted that neither claim language nor the entire contents of present Application specification recites a particular type of fruit.
(bolding original)

See also Examiner's Answer, page 20, for similar argument.

Although the Examiner supplies a purported excerpt from a

"Webster Dictionary" as to the definition of "fruit", the particular dictionary is not further identified and a copy has not been supplied to confirm what it says, what it does not say or what it says in addition to what it is purported to say.

Attached as Exhibit 6¹ is a copy of the cover page of Webster's New World Dictionary of the American Language, Second Concise Edition, pages 302 and 803. On page 302 "fruit" is defined as:

1. Any plant product, as grain, flax, vegetables, etc.: usually used in pl. 2. A sweet and edible plant structure, consisting of a fruit (sense 5) usually eaten raw, or as a dessert 3. The result or product of any action [the fruit of labor] 4. [Archaic] offspring 5. Bot. The mature ovary of a flowering plant along with its contents, as the whole peach, pea pod, etc. -*vi.*, *vt.* To bear or cause to bear fruit.

A definition similar to definition 1 is the definition which the Examiner appears to be urging in the Examiner's Answer. However it is patently clear from the specification, as well as the record thus far established in this file wrapper, that it is not products defined by definition 1 broadly to which this invention is directed. Definition 1 is a broad usage which applies to anything that is produced from the field, particularly in view of the admonition that it is usually used in the plural, e.g. fruits of the field. It is also patently clear that it is definition 2 as further qualified by definition 5 that applies to the fruit particles to which the present invention is directed.

To the contrary QUEISSER et al is directed to french fried potatoes which are "tubers" and not "fruits" as defined by

¹ Exhibits 1-5 were previously appended to Appellants' Brief.

definitions 2 and/or 5. On page 803 of Exhibit 6 a "tuber" is defined as:

1. A short, thickened, fleshy part of an underground stem, as a potato
2. A tubercle or swelling.

Thus, it is clear that the french fried potatoes of QUEISSER et al do not constitute "fruit particles" either separately or in a sugar and/or starch matrix as claimed.

3

At page 4 of the Examiner's Answer, it is stated:

The fruit particles processed in QUEISSER et al invention is not in a sugar matrix, a starch matrix or a sugar and starch matrix.

Measurement of the fruit particles in a matrix without removing the fruit particles from the matrix is well known in the art as disclosed by WILKINSON et al.

WILKINSON et al disclose the process of measurement of the snack food products made from corn materials in a uniform stark (*sic*) matrix of horny endosperm of the corn kernel by evaluating the micrograph images of the starch matrix of the cooked corn (Figures 2B-2C; Examples 1-3; Column 5, Lines 48-56; Column 11, Lines 6-36. The product being scanned comprises "**a very uniform matrix of gelatinized starch from the horny endosperm of corn**".)

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Queisser et al invention in accordance with the teachings of WILKINSON et al to analyze the image of fruit particles within a matrix selected from a **starch matrix** or a sugar matrix or a sugar and starch matrix, wherein the fruit matrix being of the kind used in fruit fillings, toppings, dairy products or **cooked food products** because it will expand the versatility of the measurement of the food particles and will encompass the inspection of a large variety of the products in food industry by merely implementing the conventional image processing. (bolding original)

The WILKINSON et al argument is also repeated at pages 21 and 23 of the Examiner's Answer.

As previously discussed QUEISSER et al does not disclose or suggest "fruit particles" as claimed contrary to the above statement.

And as is admitted in the above statement, QUEISSER et al does not disclose anything "in a sugar matrix, a starch matrix or a sugar and starch matrix." It is for this purpose that WILKINSON et al has been relied upon as showing the measurement of snack food products made from corn materials in a uniform starch matrix of gelatinized starch from the horny endosperm of corn. The Examiner's position is that it would have been obvious to modify QUEISSER et al with the teachings of WILKINSON et al to analyze fruit particles within a starch matrix. However, such modification overlooks several critical failures.

First of all QUEISSER et al does not even disclose fruit particles as previously discussed.

Secondly, the Examiner admits that QUEISSER et al does not disclose "a sugar matrix, a starch matrix or a sugar and starch matrix."

Thirdly, all that WILKINSON discloses is a starch matrix with voids. WILKINSON et al contains no disclosure of any particles in the matrix, fruit or otherwise.

Fourthly, the gelatinized starch matrix of WILKINSON et al is not the kind of matrix "used in fruit fillings, toppings, dairy products or cooked food products" as claimed. The sugar and/or starch matrix of the present invention is an aqueous, gelled or liquid matrix. That is not the kind of matrix addressed by WILKINSON et al. Although the WILKINSON et al gelatinized starch

may have been gelled at sometime in its life, it is clearly bone dry by the time it is imaged in WILKINSON et al. This is patently clear from the preparation procedures outlined in column 10, lines 1-14 of WILKINSON et al of the sample to be imaged in which the sample is sawed, frozen to -310°F, transferred to liquid nitrogen, fractured, and then placed under vacuum to allow the liquid nitrogen to boil off and "remaining water ice crystals to be removed by sublimation", and then the cross sectional surface is evaporatively coated with carbon, and finally sputter coated with gold. This is nowhere close to the objects imaged either in the present invention or QUEISSER et al.

Fifthly, the modification of QUEISSER et al by WILKINSON et al ignores the fact that in WILKINSON et al the end purpose is to image the starch matrix itself. This is the exact opposite to the present invention in which the subject of the imaging is the fruit particles while avoiding to the extent possible the presence of the sugar and/or starch matrix.

Finally, even when the disclosures of QUEISSER et al and WILKINSON et al are combined, the resulting combination still does not have any fruit particles - the very object which is imaged and analyzed in the present invention.

4

At page 18 of the Examiner's Answer, it is stated:

Furthermore, the optical characterization methodology of QUEISSER et al is also applicable to **processed foods** that encompasses non-dry food products such as fruit fillings, toppings, dairy products and cooked food products (QUEISSER et al, Column 4, Lines 6-9). This citation suggests measurement of fruit particles in a matrix. (bolding original)

The actual statement in QUEISSER et al at column 4, lines 6-9 is:

The present invention is similarly applicable to other types of samples having naturally-occurring color variations such as processed and raw foods, as well as non-food items.

This says nothing more than that QUEISSER et al is applicable to other food or non-food items which have "naturally-occurring color variations". It does not disclose or suggest anything whatsoever of fruit particles, fruit particles of the kind used in fruit fillings, toppings, dairy products or cooked food products, or anything in a matrix all of which are in the claimed invention.

5

In the paragraph bridging pages 18 and 19, it is stated:

It is submitted that, on the contrary, french fries are clearly a starched product used in a cooked food product, as set forth in the claims. The claim broad language does not recite any matter that directs to consistency and distribution of the particles in the measurement process. **Moreover, there is no limitation in the claimed invention that the fruit particles should be random in size, shape and distribution.** (bolding original)

And further, at page 21 of the Examiner's Answer, it is stated:

Claim language simply recites measurement of fruit particles within a matrix selected from the groups consisting of a sugar matrix, or **starch matrix**, or sugar and starch matrix, said fruit matrix being of the kind used in fruit fillings, or toppings, or dairy products, or **cooked food products**.

Claim language does not narrow the matrices to aqueous, gelled or liquid matrices. (bolding original)

These statements ignore the fact that the language "said fruit matrix being of the kind used in fruit fillings, toppings, dairy products or cooked food products" inherently dictates that the fruit particles are random in size, shape and distribution. Indeed, such inherency of size, shape and distribution is further evidenced by Exhibits 1-5 to Appellants' Brief.

6

At page 19 of the Examiner's Answer, it is stated:

Furthermore, the type of food being inspected, whether it is within a starch or sugar or a mixture of starch and sugar, is not critical to the operation of inspection or measurement system. The camera and computer with the imaging software in the inspection or measurement system will still operate as intended even if the food product is not within a starch or sugar product used for fruit fillings, toppings and dairy products. It is further emphasized that there is no indication in QUEISSER et al invention to limit the optical characterization methodology to french fries in dry condition.

This statement ignores the very basis of the present invention, i.e. that appellants have discovered that an optic camera and computer software of the general kind disclosed by QUEISSER et al is indeed functional in the imaging of fruit particles in a sugar and/or starch matrix of the kind found in fruit fillings, toppings and dairy products. It may be true that the camera and computer of the invention may be operative with a food product that is not in a sugar and/or starch matrix as argued by the Examiner. However, that is not the appellants' invention. Their invention is the discovery that it can be used in the presence of such matrix. QUEISSER et al has no such matrix and therefore cannot suggest the use with such matrix.

At page 19 of the Examiner's Answer, it is stated:

The type of food being inspected is a design choice especially since the present specification fails to disclose any definite image analysis specific to measurement of fruit particles within starch and/or sugar used in fruit fillings, toppings, dairy products or cooked food products. (bolding original)

And at page 26 the Examiner's Answer further states:

Finally, it is submitted that the claimed invention of the present application merely directs to capturing a picture of an item for further processing by a computer without any details concerning computerized processing. The present invention disclosure (including claims and drawings) does not include any details regarding image processing or image analysis of any kind specific to fruit particles, or starch and/or sugar matrix. In the absence of a detailed image processing, Appellants' invention is merely limited to capturing a picture of fruit particles in a matrix and is not considered novel, innovative and patentable.

Once it has been discovered as in the present invention that camera optical imaging and computer analysis can successfully be employed to analyze fruit particles in a sugar and/or starch matrix without removing the particles from the matrix, the computer processing may readily be selected by one skilled in the art using the guidelines which are expressly discussed in the specification at page 4, last full paragraph - page 5, first full paragraph. As stated there this includes using grayscale and size parameters, imaging for "blobs", statistical analysis, filtering "noise", adjusting contrast and brightness, etc. Even suitable software is expressly suggested by name, i.e. Global Image 3.0 from Data Translation Inc. This processing will vary depending on the nature of the fruit particles, the sugar and/or starch matrix and other

parameters. However, it may be readily tailored by those skilled in the art to whatever parameters are presented using the guidelines and software disclosed.

8

At pages 19-20 of the Examiner's Answer, it is stated:

Concerning Appellants' arguments on Pages 4 and 5 stating that the grooved sample tray of QUEISSER et al would be unacceptable for use with fruit particle matrix of the present invention, it should be noted that Tray 56 utilized in QUEISSER et al invention is comprised of multiple parallel grooves 58 separated by parallel ridges 60 which is constructed of a one-piece solid structure as shown in cross-sectional area of the tray in Figure 4B, and is capable of receiving **any type of fruit particles** within a sugar matrix, a starch matrix or a sugar and starch matrix of kind of fruit fillings, toppings, dairy products or cooked products when combined with the teachings of WILKINSON et al (secondary prior art of record). (bolding original)

And at pages 23 -24 of the Examiner's Answer, it is stated:

Appellants' statement on Page 11, second Paragraph concerning "the Examiner admits that QUEISSER et al does not disclose the sample tray, as claimed, which received a fruit matrix" is an intentional misinterpretation of the contents of the Office Action. As previously indicated QUEISSER et al disclose a sample tray capable of receiving fruit particles in a matrix based on the design of the tray (Tray 56 utilized in QUEISSER et al invention is comprised of multiple parallel grooves 58 separated by parallel ridges 60 which is constructed of a one-piece solid structure as shown in cross-sectional area of the tray in Figure 4B, and is capable of receiving **any type of fruit particles** within a sugar matrix, a starch matrix or a sugar and starch matrix of kind of fruit fillings, toppings, dairy products or cooked products when combined with the teachings of WILKINSON et al (secondary prior art of record).). (bolding original and underlined emphasis added)

Neither the tray 56 of QUEISSER et al nor the electron microscope sample support structure of WILKINSON et al is adequate to support and display the fruit particles in a sugar and/or starch matrix of the kind or in the manner optically imaged in the present invention. Indeed, because the tray 56 in QUEISSER et al is comprised of multiple parallel groves 58 separated by parallel ridges 60 as admitted in the Examiner's Answer as quoted above, it will likely result in the relatively fluid fruit particle starch and/or sugar matrix combination to flow down into the grooves 58 together with the smaller fruit particles, and the larger fruit particles to be supported at the top on or between the ridges 60. Thus, imaging and sizing would likely be unbalanced in favor of the larger particles which are optically visible, and would hide the smaller submerged particles which must also be part of the imaging process for accuracy of analysis. This would result in a false or inaccurate imaging and analysis. As disclosed in the present invention the sample to be imaged is spread "evenly" and so as to obtain "a uniform thin layer covering the bottom of the sample tray 36" Specification, page 8, lines 4-8. This cannot be done in the grooved and ridged tray of QUEISSER et al.

As to WILKINSON et al which employs electron microscopy in distinct contrast to optical camera imaging, the tiny prepared piece to be observed after it is prepared by the elaborate procedure outlined in WILKINSON et al at column 9, line 66 - column 10, line 24 is mounted "on the stub" of the electron microscope. Electron microscope stubs by virtue of the distinctly different nature of the imaging procedure are not capable of supporting or retaining the relatively large area fluid mixture of fruit particles in sugar and/or starch matrix which is imaged in the

present invention.

Thus, neither QUEISSER et al nor WILKINSON et al discloses any suitable mechanism for display of the fruit particle in sugar and/or starch matrix of the present claimed invention for imaging.

The statement at page 23 that "Appellants' statement. . . is an intentional misrepresentation of the contents of the Office Action" is not true. In this regard, the Board's attention is respectfully directed to the last Office Action Final Rejection, mailed October 7, 2002, which at the bottom of page 4 and top of page 5 states:

QUEISSER et al do not disclose the sample tray adapted to receive a fruit matrix selected from a starch matrix or a sugar matrix or a sugar and starch matrix, said fruit matrix being of the kind used in fruit fillings or cooked food products. Measurement of the fruit particles in a matrix without removing the fruit particles from the matrix is well known in the art as disclosed by WILKINSON et al. (emphasis added)

Thus, appellants have represented exactly what was stated by the Examiner.

9

At pages 20-21 of the Examiner's Answer, it is stated:

On Pages 6 and 7, Appellants refer to Exhibits 1-5 as a support that fruit matrices are aqueous, gelled or liquid in nature. It is submitted that in addition to these exhibits, there are definitely numerous published documents and literatures concerning different types of matrices. Obviously, since non (sic) of these documents are referred to in the present Application specification, nor have been submitted as an Information Disclosure Statement (Form PTO-1449), the teachings and content of these documents are not relevant to the present claimed invention. However, the exhibits teachings are not persuasive because they teach the same concept of matrix as shown in the secondary reference, WILKINSON et al,

which discloses a gelatinized starch matrix.

It is not entirely clear what point the Examiner is attempting to make in this paragraph or which "documents" are referred to which have not been referred to in the specification or submitted on a Form PTO-1499. It appears that these "documents" are Exhibits 1-5 and not "the documents and literature concerning different types of matrices".

Exhibits 1-5 attached to Appellants' Brief need not be submitted in an Information Disclosure Statement because they do not contain information which is material to patentability as defined in 37 CFR § 1.98. Exhibits 1-5 were simply submitted in the record as a showing of what is considered by those skilled in the art to be a "fruit matrix being of the kind used in fruit filings, toppings, dairy products or cooked food products" as set forth in the claims, and of the relatively aqueous, gelled or liquid in nature of such matrix in contrast to the french fries which are imaged by QUEISSER et al and the bone dry gelatinized starch which is electron microscope imaged by WILKINSON et al.

Conversely, the Examiner has not cited or identified even a single example of the "definitely numerous published documents and literatures concerning different types of matrices" to which he alludes.

Finally, the teachings of Exhibits 1-5 should definitely be persuasive because they do not teach the same concept of matrix as shown by WILKINSON et al which discloses a gelatinized starch matrix. The "gelatinized starch matrix" disclosed by WILKINSON et al is not a gelled matrix - it is a matrix of gelatinized starch. Those are quite different from each other. The starch matrix of the present invention at the time it is imaged is itself relatively

aqueous, gelled or liquid in nature. The gelatinized starch in the matrix of WILKINSON et al may have had a gelled form at sometime in its life, but it is absolutely bone dry at the time that it is imaged in WILKINSON et al, unlike either the present invention or the matrices of Exhibits 1-5.

10

At page 22 of the Examiner's Answer, it is stated:

On Page 9, first and second Paragraphs, and on Page 10, Appellants argue that **the matrix of food product** of WILKINSON et al is a dry matrix and is not an aqueous, gelled or liquid matrix, and is "a relatively uniform matrix" in contrast to the randomly distributed fruit particles of the claimed invention.

It is submitted that the matrix of food product of WILKINSON et al is a gelatinized starch matrix and is not dry (WILKINSON et al, Column 3, Lines 25-32; Column 11, Lines 3-6). (bolding and underlining original)

It may well be that at some point in time the gelatinized starch of WILKINSON et al may contain some moisture, not to say however that it ever contained enough moisture to be aqueous, gelled or liquid as is the matrix which is imaged in the present invention. However, as previously stated it is perfectly clear that at the time the uniform matrix of gelatinized starch is electron microscope imaged in WILKINSON et al, it is absolutely bone dry after sawing, placing in liquid fluorinated hydrocarbon refrigerant at -310°F, placing in liquid nitrogen and fracturing the piece, then placing under vacuum to allow the liquid nitrogen to boil off and "any remaining water ice crystals to be removed by sublimation", evaporatively coating the sample with carbon and sputter coating it with gold. column 9, line 65 - column 10, line 24.

11

At page 22 of the Examiner's Answer, it is stated:

Furthermore, WILKINSON et al also disclose fruit particles in a matrix of different material (e.g., WILKINSON et al, Column 12, Lines 40-44. The food product contains 90 parts by weight of the corn reduction flour (fruit particles) and 10 parts by weight of pregelatinized tapioca starch).

The 90 parts by weight of corn reduction flour which the Examiner relies upon as being "fruit particles" is in fact the starch matrix. That is what the WILKINSON et al invention is all about - the use of the particular corn reduction flour to form the starch matrix. It is this flour which contains the starch from the horny endosperm which WILKINSON et al desires. column 3, line 60 -- column 4, line 25. The pregelatinized tapioca starch in that particular example also forms a part of the starch matrix. Thus, WILKINSON et al is doing nothing more than imaging the starch matrix and not one which contains fruit particles as in the present invention, because WILKINSON et al contains no fruit particles. WILKINSON et al is all starch matrix and voids and nothing more.

12

At pages 22-23 of the Examiner's Answer, it is stated:

It is asserted that, as it is well known to the skilled in the art, electron microscope scanning procedure is comprised of taking the image of the electrons reflected from the surface under experiment by a capturing device such as a camera. The electron microscope scanning is definitely a photo optic imaging procedure.

The electron microscope scanning procedure of WILKINSON et al couldn't be more different than the simple photo optic imaging

procedure of QUEISSER et al and the claimed invention. It may be true that a photograph is ultimately taken in the electron microscope scanning procedure, but that is not the point. In the electron microscope scanning procedure, the preparation of the sample is entirely different. As outlined in WILKINSON et al the piece is sawed, placed in liquid fluorinated hydrocarbon refrigerant at -310°F, transferred to liquid nitrogen, fractured, placed under vacuum to remove the nitrogen and any water ice crystals by sublimation, is evaporatively coated with carbon and then sputter coated with gold. None of these preparation steps are needed nor are they wanted in the photo optic imaging procedure of the present invention. They are necessary in the electron microscope scanning procedure to ensure that the electrons which bombard the sample will present the proper image. In contrast in the photo optic imaging procedure light, not electrons, is simply reflected from and/or absorbed by the actual fruit particles without other preparation. In addition, the electron microscope scanning procedure operates in magnitudes of the size of a micron, whereas in the photo optic procedure of the claimed invention the objects analyzed are close to if not the same as actual size with little if any magnification typically involved. Electron microscope scanning equipment and photo optic imaging equipment are entirely different, operate in an entirely different manner, produce an entirely different result, and one skilled in the art would not consider substituting one for the other particularly for the analysis described in the present invention.

13

At pages 24-25 of the Examiner's Answer, it is stated:

HECK et al teachings in combination with WILKINSON

et al teachings will meet claimed language. As previously stated the claimed language does not recite any food products which are random in distribution in the matrix, or any food which are in aqueous, gelled or liquid matrix. Based on definition of object by HECK et al (Column 6, Lines 66-67, Column 7, Lines 1-10), HECK et al invention is applicable to any type of fruit (whether a whole fruit or a part of fruit) that can be sorted and classified according to the method and apparatus of the invention.

HECK et al discloses the imaging of the "topographic surface features of a translucent object such as citrus fruit with peel." See ABSTRACT. The disclosure of HECK et al is the imaging of single whole fruit objects and the purpose is to analyze the peel of the whole, fruit for characteristics and defects such as "porosity, puff and crease, ridges and valleys, fractures, decomposition and other selected factors." column 3, lines 56-61. The Examiner relies on a brief sweeping statement in HECK et al at columns 6 and 7 of objects to include other things other than citrus fruit and then even further extrapolates to such objects as including "parts of fruit". HECK et al contains no disclosure or suggestion whatsoever of parts of fruit, or that fruit parts may be imaged as in the present invention. There is absolutely no basis whatsoever for such extrapolation.

Also of great significance is that the whole citrus fruits, or for that matter any object that may be imaged by HECK et al, is not imaged in a sugar and/or starch matrix. HECK et al contains no disclosure whatsoever of the presence of any matrix. That is the discovery of the present invention and that is what is claimed in the present application, i.e. the imaging of fruit particles while in a matrix.

And as previously discussed, WILKINSON et al contains no disclosure of fruit particles. Thus, even when both HECK et al and WILKINSON et al are combined no fruit particles are present.

14

At page 21 of the Examiner's Answer, it is stated:

It should be noted that appellants' arguments pertain to either Queisser et al or Wilkinson et al individually. However, the basis for rejection is on the combination of references. Thus, the combined teachings of Queisser et al and Wilkinson et al meet the claim limitations.

And at pages 24 and 25 of the Examiner's Answer, it is stated:

Heck et al teachings in combination with Wilkinson et al teachings will meet claimed language. As previously stated the claimed language does not recite any food products which are random in distribution in the matrix, or any food which are in aqueous, gelled or liquid matrix. Based on definition of object by Heck et al invention is applicable to any type of fruit (whether a whole fruit or a part of fruit) that can be sorted and classified according to the method and apparatus of the invention.

Consequently, based on the above-mentioned discussion, Appellants conclusion on first Paragraph of Page 12 are not persuasive. Combined teachings of prior arts of record, i.e., "Queisser et al and Wilkinson et al" or Heck et al, Wilkinson et al and Sistler et al" meet claimed invention.

It is true that the teachings of QUEISSER et al or HECK et al and WILKINSON et al have been combined by the Examiner for the purpose of meeting the claim limitations. However, applicants' arguments have been directed to the critical deficiencies in the content of QUEISSER et al, HECK et al and WILKINSON et al respectively to emphasize the point that there would be absolutely no motivation by one skilled in the art to modify the optic imaging

methodology of QUEISSER et al or HECK et al by the wholly different electron microscope imaging technique of WILKINSON et al. Indeed, as previously discussed not only are the imaging techniques different, but neither QUEISSER et al, HECK et al nor WILKINSON et al disclose or suggest the imaging of fruit "particles" in or outside of any matrix. Neither discloses fruit particles, the Examiner admits that QUEISSER et al and HECK et al fail to disclose either a sugar and/or starch matrix and, even when the prior art is combined no relatively aqueous, gelled or liquid matrices of the kind used in fruit fillings, toppings, dairy products or cooked food products of the present invention are analyzed. And, even when each of these references is combined, the resulting combination does not include fruit particles.

15

At pages 25 and 26 of the Examiner's Answer, it is stated:

Appellants original Declaration Under Rule 131, filed May 23, 2000, and the Supplemental Declaration Under Rule 131, filed February 13, are considered ineffective to overcome QUEISSER et al reference as previously indicated in Office Actions Paper Number 16, 23 and 34. In addition to Appellants admission that Exhibit "F" has a date after the filing date of QUEISSER et al reference, as it was previously indicated, the Declaration Exhibits fail to provide evidence for the allegations in Paragraph 10 of the original Declaration and paragraphs 5-8 of the Supplemental Declaration, for establishing a reduction to practice of the instant invention prior to the effective date of QUEISSER et al reference.

Exhibit "G" of the Supplemental Declaration, merely refers to "attending imaging system demo representation (sic)" and "fruit sales representation (sic)". Memorandums attached to the original Declaration refer to "fruit retention" that is a well known procedure based on the instant Application Background acknowledgment, but not to the specific fruit particles within a sugar and/or

starch matrix.

The Declaration Exhibits do not include any memorandums, notes, computer printouts, tables or graphs illustrating the details of the claimed measurement test on "fruit particles within a sugar and/or starch matrix", and do not meet the requirements of MPEP 715.07 because it lacks sufficient supporting data.

As to the statement regarding Exhibit "F", its date is admittedly after the filing date of QUEISSER et al. As previously discussed in Appellants' Brief, Exhibit "F" was simply attached to the Declaration because it was the only sketch available of the actual equipment that had been used in the earlier tests which constituted a reduction to produce prior to the filing date of QUEISSER et al. This is clearly spelled out in the first Declaration, paragraphs 10 and 11. Thus, Exhibit "F" is not relied upon for its date, but only for the equipment it shows - the same equipment that was used in the test that resulted in a reduction to practice before the filing date of QUEISSER et al.

Exhibit "G" of the Supplemental Declaration does only refer to attending "imaging system demo presentation" and "fruit sales presentation" as stated in the Examiner's Answer. However, the Supplemental Declaration itself, paragraphs 5 and 6, clearly spells out what was shown at that those presentations, i.e. the photo imaging and analysis of fruit particle in matrix of the present invention. Exhibit "G" was simply added as an exhibit to show that there was a demonstration of the invention to a rather large audience which itself is strong evidence that a reduction to practice had occurred at the time Exhibit "G" came into existence which was a date prior to the filing date of QUEISSER et al.

The Examiner also argues that various memorandums attached to

the original Declaration refer to "fruit retention" that was a well known procedure according the application. It is true that the term "fruit retention" is employed in Exhibits D and E. However, it is employed there only in conjunction with "computer imaging" which is what this invention is directed to. The prior "fruit retention procedure" did not involve computer imaging. In that procedure, the matrix was washed from the fruit particles and the remaining particles were simply weighed.

The reason the term "fruit retention" appears in Exhibits D and E is simply that due to its previous extensive use as the principal methodology for the analysis of fruit particles, it had taken on the status of a generally generic name for any such analysis. However, it is perfectly clear from the text of the Declaration, paragraphs 8-10, that the work that was being done and the tests reported in these exhibits was the fruit particle in sugar and/or starch matrix computer imaging of the present invention.

It should also be noted that even though the term "fruit retention" may have been employed in Exhibits D and E, the fact is ignored that the earlier in time Exhibit B specifically states that the research to be done was to follow up the use of computer imaging "for the measurement of fruit particles in a matrix". (Exhibit B, last paragraph)

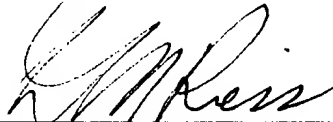
In any event, even if all of the declaration Exhibits A-G are ignored, the Manual of Patent Examining Procedure § 715.07 clearly sets forth that priority of invention may be established simply by adequate facts set forth in the declaration itself. It states "Evidence in the form of exhibits may accompany the affidavit or declaration." (emphasis added) Thus, exhibits are encouraged, but

they are not mandatory. Moreover, "averments made in a 37 CFR § 1.131 affidavit or declaration do not require corroboration; an applicant may stand on his or her own affidavit or declaration if he or she so elects." MPEP § 715.07 Thus, even if all of the declaration exhibits A-G are ignored, the statements in appellants' declarations themselves fully comply with the requirements of Rule 131 to establish a date of invention prior to the filing date of QUEISSER et al, and any rejection on QUEISSER et al should be withdrawn.

CONCLUSION

For the foregoing reasons, and also for the reasons stated in Appellants' Brief, it is respectfully submitted that all of the claims in the present application and which are the subject of this appeal, i.e. claims 1-10 and 12-20, are allowable, and that the rejection of those claims should be reversed.

Respectfully submitted,



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Date: March 24, 2003

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AMERICAN LANGUAGE

David B. Guralnik, GENERAL EDITOR



SIMON AND SCHUSTER

EXHIBIT

6

frost-ing (-ig) *n.* 1. a mixture of sugar, butter, eggs, etc. for covering a cake; icing 2. a dull, frostlike finish on glass, metal, etc.

frost-y (-ē) *adj.* **frost-i-er**, **frost-i-est** 1. cold enough to produce frost; freezing 2. covered as with frost 3. cold in manner or feeling; unfriendly —**frost-i-ly** *adv.* —**frost-i-ness** *n.*

froth (frōth, frūth) *n.* [ON. *frotha*] 1. foam 2. foaming saliva caused by disease or great excitement 3. light, trifling, or worthless talk, ideas, etc. —*vt.* 1. to cause to foam 2. to cover with foam 3. to spill forth as foam —*ed.* to foam

froth-y (-ē) *adj.* **froth-i-er**, **froth-i-est** 1. foamy 2. light; trifling; worthless —**froth-i-ly** *adv.* —**froth-i-ness** *n.*

frow-frow (frōf/frōf) *n.* [Fr., echoic] 1. a rustling or swishing, as of a skirt 2. [Colloq.] excessive ornamentation or affected elegance

frow-ward (frō'wārd, -wārd) *adj.* [ME., unruly; see *FRU* & *-WARD*] not easily controlled; stubbornly willful —**frow-ward-ly** *adv.* —**frow-ward-ness** *n.*

frown (fraun) *vt.* [*<* OFr. *<* *frangere*, sullen face *<* Gaul.] 1. to contract the brows, as in displeasure or concentrated thought 2. to show displeasure or disapproval (with *on* or *upon*) —*vt.* to express (disapproval, etc.) by frowning —*n.* 1. a contracting of the brows in sternness, thought, etc. 2. any expression of displeasure or disapproval —**frown'er** *n.* —**frown-ing-ly** *adv.*

frow-zy (frou'zē) *adj.* -zi-er, -zi-est [*<* ?] 1. [Rare] bod-smelling 2. dirty and untidy; slovenly Also *sp.* **frow'zy** —**frow-zy-ly** *adv.* —**frow-zy-ness** *n.*

froze (frōz) *pt.* of FREEZE

fro-zen (-'n) *pp.* of FREEZE —*adj.* 1. turned into or covered with ice 2. damaged or killed by freezing 3. having heavy frosts and extreme cold (the *frozen north*) 4. preserved by freezing, as food 5. as if turned into ice (*frozen with terror*) 6. without warmth or affection 7. arbitrarily kept at a fixed level or in a fixed position 8. not readily converted into cash (*frozen assets*)

frozen *adj.* toward a food like ice cream, but with less butterfat content and a looser consistency

frt. freight

fruc-ti-fy (fruk'tā frī) *vt.*, *vt.* -frīd', -fy-ing [*<* OFr. *<* L. *fructificare*; see *FRUIT* & *-FY*] to bear or cause to bear fruit —**fruc'ti-fi-ca'tion** *n.*

fruc-tose (fruk'tōs, frōk't-) *n.* [*<* L. *fructus*, FRUIT + *-ose*] a crystalline sugar, C₆H₁₂O₆, found in sweet fruits and in honey; fruit sugar; levulose

fru-gal (frōg'g'l) *adj.* [L. *frugal* *<* *frugi*, fit for food *<* *frux* (gen. *frugis*), fruits] 1. not wasteful; thrifty 2. not costly; inexpensive or meager (a *frugal meal*) —**fru-gal-i-ty** (-gāl'ā tē) *n.*, *pl.* -ties —**fru-gal-ly** *adv.*

fruit (frōt) *n.* see PLURAL, U. D. 3 [OFr. *<* L. *fructus* *<* *pp.* of *frui*, to enjoy] 1. any plant product, as grain, flax, vegetables, etc.; usually used in *pl.* 2. a sweet and edible plant structure, consisting of a fruit (sense 5), usually eaten raw or as a dessert 3. the result or product of any action (the *fruit of labor*) 4. [Archaic] offspring 5. Bot. the mature ovary of a flowering plant, along with its contents, as the whole peach, pea pod, etc. —*vt.*, *vt.* to bear or cause to bear fruit

fruit-age (-ij) *n.* 1. the bearing of fruit 2. a crop of fruit 3. a result; product; consequence

fruit-cake (-kāk') *n.* a rich cake containing nuts, preserved fruit, citron, spices, etc.

fruit fly 1. a small fly whose larvae feed on fruits and vegetables 2. same as *DIPOPHILA*

fruit-ful (-fāl) *adj.* 1. bearing much fruit 2. producing much; productive; prolific 3. producing results; profitable —**fruit-ful-ly** *adv.* —**fruit-ful-ness** *n.*

fru-i-ti-ful (frōd'ish'ən) *n.* [OFr. *<* LL. *<* *frui*; see *FRUIT*] 1. the pleasure of using or possessing 2. the bearing of fruit 3. fulfillment; realization

fruit-less (frōd'lis) *adj.* 1. without results; unsuccessful; vain 2. bearing no fruit; sterile —**fruit-less-ly** *adv.* —**fruit-less-ness** *n.*

fruit sugar same as *FRUCTOSE*

fruit tree a tree that bears edible fruit

fruit-wood (-wōd') *n.* the wood of any of various fruit trees, used in furniture, paneling, etc.

fruit-y (frōd'i) *adj.* **fruit-i-er**, **fruit-i-est** 1. like fruit in taste or smell 2. rich or mellow in tone (a *fruity voice*) 3. [Slang] crazy —**fruit-i-ly** *adv.* —**fruit-i-ness** *n.*

frump (frump) *n.* [*<* Du. *frumpelen* *<* *rompelen*, to rumple] a dowdy, unattractive woman —**frump-ish** *adj.* —**frump-y** *adj.* **frump-i-er**, **frump-i-est**

Frun-za (frōn'zē) capital of the Kirghiz S.S.R., in the SC part; pop. 416,000

frus-trate (frus'trāt) *vt.* -trat-ed, -trat-ing [*<* L. *pp.* of *frustrare* *<* *frustra*, in vain] 1. to cause to have no effect; nullify (to *frustrate plans*) 2. to keep from an objective; foil (to *frustrate a foe*) 3. Psychol. to keep from gratifying certain desires —*vi.* to become frustrated —**frus-tra-tion** *n.*

frus-tum (frus'tam) *n.*, *pl.* -tum, -ta (-tā) [L., a piece, bit] the solid figure formed when the top of a cone or pyramid is cut off by a plane parallel to the base

fry (fri) *vt.*, *vt.* **fried**, **fry-ing** [*<* OFr. *<* L. *frigere*, to fry] 1. to cook or be cooked, usually in hot fat or oil, over direct heat 2. [Slang] to electrocute or be electrocuted —*n.*, *pl.* **fries** 1. a fried food; esp., [pl.] fried potatoes 2. a social gathering where food is fried and eaten

fry' (fri) *n.*, *pl.* **fry** [prob. a merging of ON. *frjo*, *caad*, with Anglo-Fr. *frat*, *spoon*] 1. young fish 2. small adult fish, esp. in large groups 3. offspring —**fray** 1. child-dren 2. trivial people or things

fry-er (fri'er) *n.* 1. one that fries; specif., a utensil for frying foods 2. food to be fried, esp. a young, tender chicken

f-number (ef'nūb'r) *n.* any of the settings for the f-number of a camera



ft. 1. foot; feet 2. fort

FTC Federal Trade Commission

fath. fathom

fath-om (fyāth'əm) *n.* [MedL., after L. *Fuchs*, 16th-c. G. botanist] 1. a shrubby plant with drooping pink, red, or purple flowers 2. purplish red —*adj.* purplish-red

fud-dle (fud'l) *vt.* -dled, -dling [akin ? to G. dial. *fudeln*, to swindle] to confuse or stupefy as with alcoholic liquor —*n.* a fuddled condition

fud-dy (fud'i) *adj.* -dud'ed, -dud'ing [*<* prob. based on dial. *fud*, buttocks] [Slang] 1. a fussy, critical person 2. an old-fashioned person

fud-ge (fuj) *n.* [*<* ? echoic] 1. empty talk; nonsense 2. [*<* ?] a soft candy made of butter, milk, sugar, flavoring, etc. —*vt.* **fud-ge**, **fud-ge-ing** to make dishonestly or carelessly (to *fudge*)

fu-gal (fyūg'āl, fyūg'āl) *n.* [*<* OFr. *fugale*, ult. *<* L. *fugere*, to flee] 1. coal, oil, gas, wood, etc. burned to supply heat or power 2. fissionable material, as in a nuclear reactor 3. anything that maintains or intensifies strong feeling, etc. —*vt.* -ged, -ging or -dled, -dled to supply with fuel —*vt.* to get fuel —**fu-gal-er**, **fu-gal-est** *n.*

fuel *n.* cell any of various devices that convert chemical energy directly into electrical energy

fuel oil any oil used for fuel

fu-geo (fyūgō) (Fr. *<* L. *fugere*, to flee) a suffix meaning something that drives away (*vermifuge*)

fu-gi-tive (fyūg'i-tiv) *adj.* [*<* OFr. *<* L. *pp.* of *fugere*, to flee] 1. fleeing or having fled, as from danger, justice, etc. 2. passing quickly; fleeting; evanescent 3. on matters of temporary interest (*fugitive essays*) 4. roaming; shiftdom —*n.* 1. a person who flees or has fled from danger, justice, etc. 2. a fleeting or elusive thing —**fu-gi-tiv-ly** *adv.*

fu-gue (fyūgō) *n.* [Fr. *<* It. *<* L. *<* *fugere*, to flee] a musical composition in which a subject is announced by one voice and then developed contemporaneously by each of usually two or three other voices —**fu-gue-ly** *adv.* —**fu-gue-ness** *n.*

Fu-jō (fūjō) extinct volcano on Honshu island, Japan, near Tokyo; also **Fu-jō-yō** (fūjō-yō)

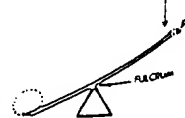
ful (fāl, fī; for *d*, usually *fool*) [OE. *<* full, FULL] a suffix meaning: 1. full of, characterized by, having (*joyful*); 2. having the qualities of (*masterful*) 3. able or tending to (*helpful*) 4. *pl.* -fuls the quantity that fills (*handful*)

ful-crum (fool'krəm, ful'-) *n.*, *pl.* -crums, -crā (-krā) [L., akin to *fulgere*, to prop] 1. the support or point of support on which a lever turns in raising or moving something 2. a means of exerting influence, pressure, etc.

ful-fill, **ful-ful** (fool'fīl) *vt.* -filled', -fill-ing [OE. *fullfyllan*] 1. to carry out (something promised, predicted, etc.); cause to be or happen 2. to do (something required); obey 3. to satisfy (a condition) 4. to bring to an end; complete —**ful-fill-ment** *n.* to realize completely one's ambitions, potentialities, etc. —**ful-fill'er** *n.* —**ful-fill-ment**, **ful-fill-ment** *n.*

ful-gent (ful'jant, fool'-) *adj.* [*<* L. *pp.* of *fulgere*, to flash] (Now Rare) very bright; radiant

full (fool) *adj.* [OE.] 1. having in it all there is space for, filled (a *full jar*) 2. a) having eaten all that one wants b) having had more than one can stand (of) 3. occupying all of a given space (a *full load*) 4. well supplied or provided (with of) (a tank *full of gas*) 5. filling the required number, measure, etc.; complete (a *full dozen*) 6. thorough, absolute (come to a *full stop*) 7. having reached the greatest development, size, etc. (a *full moon*) 8. having the same parents (full brothers) 9. having clearness, volume, and depth (a *full tone*) 10. of the highest rank (a *full professor*) 11. plump, round (a *full face*) 12. with loose



- truth drug** an anesthetic or hypnotic, as thiopental sodium, regarded as tending to make a person taking it willing to answer questions; also **truth serum**
- truth-ful** (trúth'fúl) *adj.* 1. telling the truth; honest 2. agreeing with fact or reality —**truth-ful-ly** *adv.* —**truth-ful-ness** *n.*
- try** (tri) *vt.* **tried**, **try'ing** [OFr. *trier*, ult. < ? L. pp. of *terere*, to thresh grain] 1. to melt or render (fat, etc.) to get (the oil); usually with *out* 2. a) to examine and decide (a case) in a law court b) to determine legally the guilt or innocence of (a person) 3. to put to the proof; test 4. to test the faith, patience, etc. of; afflict (he was sorely *tried*) 5. to subject to a severe test or strain 6. to test the effect of; experiment with (try this recipe) 7. to attempt; endeavor (try to forget) —*vi.* 1. to make an effort, attempt, etc. 2. to experiment —*n.*, *pl.* **tries** an attempt; effort; trial —**try on** to test the fit, etc. of (a garment) by putting it on —**try one's hand at** to attempt (to do something), esp. for the first time —**try out** 1. to test the quality, value, etc. of, as by using 2. to test one's fitness, as to be on a team, act a role, etc.
- try-ing** (-ing) *adj.* that tries one's patience; annoying; exasperating; irksome —**try'ing-ly** *adv.*
- try-out** (tri'out) *n.* [Colloq.] a chance to prove, or a test to determine, one's fitness to be on a team, act a role, etc.
- tryp-sin** (tríp'sin) *n.* [G., prob. < Gr. *tryein*, to wear away + G. (*pepsin*: see *PEPSIN*) a digestive enzyme in the pancreatic juice: it changes proteins into polypeptides —**tryp'-tic** *adj.*
- try-sail** (tri'síl, -sál') *n.* [*< naut. phr. a try*: position of lying to in a storm] a small, stout, fore-and-aft sail used for keeping a vessel's head to the wind in a storm
- try square** an instrument for testing the accuracy of square work and for marking off right angles
- tryst** (trist, tríst) *n.* [OFr. *triste*, hunting station] 1. an appointment to meet at a specified time and place, esp. one made secretly by lovers 2. a) a meeting held by appointment b) the place of such a meeting; also **trysting place** —**tryst'er** *n.*
- tsar** (tsár, zár) *n.* var. sp. of *CZAR* —**tsar'dom** *n.* —**tsar'ism** *n.* —**tsar'ist** *adj.*, *n.*
- Tschakowsky** see *TCHAIKOVSKY*
- tsé-se fly** (tsé'sé, tsé't, -sét', -sét') [Afr. < the Bantu name] any of several small flies of central and southern Africa, including the one that carries sleeping sickness
- T-shirt** (tí'shúrt') *n.* [so named because T-shaped] a collarless pullover shirt with short sleeves
- Tsing-tao** (tshín'dóu) seaport in NE China, on the Yellow Sea: pop. 1,144,000
- tsk interj.**, *n.* a clicking or sucking sound made with the tongue, to express disapproval, sympathy, etc.
- tsp.** 1. teaspoon(s) 2. teaspoonful(s)
- T-square** a T-shaped ruler for drawing parallel lines
- T-strap** (tí'strap') *n.* 1. a T-shaped strap over the instep of a shoe 2. a woman's or girl's shoe with such a strap
- tsu-na-mi** (tsóo ná'mé) *n.* [Jap. < *tsu*, a harbor + *nami*, wave] a huge sea wave caused by a disturbance under water, as an earthquake; popularly, but inaccurately, called **tidal wave** —**tsu-na'mic** (-mík) *adj.*
- Tu**, Tuesday
- tu-a-ta-ra** (tóo'a tá'ra) *n.* [*< Maori* < *tua*, back + *taru*, spine] a primitive, lizardlike reptile of islands near New Zealand, with a row of spines in the middle of the back
- tub** (túb) *n.* [MDu. *rubbe*] 1. a) a round, open, wooden container, usually formed of staves and hoops fastened around a flat bottom b) any large, open container of metal, etc., as for washing c) as much as a tub will hold 2. a) *short for* BATHTUB b) [Brit. Colloq.] a bath in a tub 3. [Colloq.] a slow-moving, clumsy ship or boat —*vt.*, *vi.* **tubbed**, **tub'bing** 1. [Colloq.] to wash in a tub 2. [Brit. Colloq.] to bathe (oneself) —**tub'ba-ble** *adj.* —**tub'ber** *n.*
- tu-ba** (tóo'bá, -bá) *n.*, *pl.* **tu'bas**, **tu'bae** (-bá) [L., a trumpet] a large, brass-wind musical instrument having three to five valves
- tub-by** (túb'bí) *adj.* -**bi-er**, -**bi-est** 1. shaped like a tub 2. short and fat —**tub'bi-ness** *n.*
- tube** (tóob, -tóob) *n.* [Fr. < L. *tubus*, a pipe] 1. a) a slender, hollow cylinder or pipe of metal, glass, rubber, etc., in which gases and liquids can flow or be kept b) an instrument, part, organ, etc. resembling a tube (a bronchial *tube*) 2. a rubber casing inflated with air and used, esp. formerly, with an outer casing to form an automotive tire 3. an enclosed, hollow cylinder of thin, pliable metal, etc. with a screw cap at one end, used for holding pastes or semiliquids 4. *short for* a) ELECTRON TUBE b) VACUUM TUBE 5. a) an underground tunnel for a railroad, subway, etc. b) [Brit. Colloq.] a subway —*vt.* **tubed**, **tub'ing** 1. to provide with, place in, or pass through a tube or tubes 2. to make tubular —**down the tube** (or *tubes*) [Colloq.] in or into a condition of failure, defeat, loss, etc. —**the tube** [Colloq.] television —**tub'al** *adj.* —**tub'ate** *adj.* —**tube'like** *adj.*
- tube foot** any of numerous projecting, water-filled tubes in most echinoderms, used in moving about, handling food, etc.
- tube-less tire** (-lís) a tire for an automotive vehicle, consisting of a single air-filled unit without an inner tube
- tu-ber** (tóob'ar, -tóob') *n.* [L., lit., a swelling] 1. a short, thickened, fleshy part of an underground stem, as a potato 2. a tubercle or swelling
- tu-ber-cle** (-k'l) *n.* [L. *tuberculum*, dim. of *tuber*: see *prec.*] 1. a small, rounded part growing out from a bone or from the root of a plant 2. any abnormal hard nodule or swelling; specif., the typical nodular lesion of tuberculosis
- tubercle bacillus** the bacterium causing tuberculosis
- tu-ber-cu-lar** (tóo bur'kyá lar, -tyoo-) *adj.* 1. of, like, or having tubercles 2. of or having tuberculosis 3. caused by the tubercle bacillus Also **tu-ber-cu-lous** (-lús) —*n.* a person having tuberculosis
- tu-ber-cu-lin** (-lín) *n.* a sterile solution prepared from a culture of the tubercle bacillus and injected into the skin as a test for tuberculosis
- tu-ber-cu-lo-sis** (tóo bur'kyá ló'sis, -tyoo-) *n.* [ModL.: see TUBERCLE & -OSIS] an infectious disease caused by the tubercle bacillus and causing tubercles to form in body tissues; specif., tuberculosis of the lungs; consumption
- tube-rose** (tóob'róz', -tyóob') *n.* [ModL. < L. *tuberosus*, TUBEROUS] a perennial Mexican plant with a tuberous rootstock and white, sweet-scented flowers
- tu-ber-ous** (tóob'ar as, -tyóob') *adj.* [*< Fr.* < L. *tuberosus*: see TUBERCLE & -OUS] 1. covered with rounded, wartlike swellings; knobby 2. of, like, or having a tuber or tubers Also **tu-ber-ose'** (-ós') —**tu-ber-ose'-ty** (-bá ras'á té) *n.*, *pl.* -**ties**
- tu-bi-fex** (tóo'bá fex's, -tyóob') *n.*, *pl.* -**fex'es**, -**fex'** [ModL. < L. *tubus*, a pipe + *-fex* < *facere*, to make] a small freshwater worm, found esp. in polluted waters and often used as food for aquarium fish
- tub-ing** (tóob'ing, -tyóob') *n.* 1. a series or system of tubes 2. material in the form of a tube 3. a length of tube
- tu-bu-lar** (tóob'yá lar, -tyóob') *adj.* [*< L.* dim. of *tubus*, a pipe] 1. of or shaped like a tube 2. made with tubes Also **tu-bu-late** (-lít) —**tu-bu-lar'-ty** (-lar'á té) *n.*
- tu-bule** (tóob'yool, -tyóob') *n.* a small tube
- tuck** (túk) *vt.* [*< MDu.* *tucken*, to tuck & cognate OE. *tucian*, to tug] 1. to pull up or gather up in a fold or folds, as to make shorter 2. to sew a fold or folds in (a garment) 3. a) to thrust the edges of (a sheet, napkin, etc.) under or in, in order to make secure (usually with *up*, *in*, etc.) b) to cover or wrap snugly (*tuck the baby in bed*) 4. to put or press snugly into a small space; cram (to *tuck* shoes in a suitcase) 5. to put into a secluded, empty, or isolated spot —*vi.* 1. to draw together; pucker 2. to make tucks —*n.* a sewed fold in a garment —**tuck away** 1. to eat or drink heartily 2. to put aside, as for future use —**tuck in** to pull in or contract (one's chin, stomach, etc.)
- tuck-er** (túk'ar) *n.* 1. a person or device that makes tucks 2. a neck and shoulder covering formerly worn with a low-cut bodice by women 3. [Austral. Slang] food
- tuck-er'** (túk'ar) *vt.* [*prob. < tuck*, in obs. sense "to punish, rebuke"] [Colloq.] to tire (*out*); weary
- Tuc-son** (tóo'san, -tób san') [Sp. < Pima *tu-uk-so-on*, black base, after a dark stratum in a nearby mountain] city in S Ariz.: pop. 263,000
- Tu-dor** (tóo'dor, -tyóob') ruling family of England (1485-1603) —*adj.* designating or of a style of architecture popular under the Tudors, characterized by shallow moldings, extensive paneling, etc.
- Tues.**, **Tue**, Tuesday
- Tues-day** (tóobz'dé, -tyóobz') (-dā) *n.* [OE. *Tiwes dæg*, lit., day of the god of war *Tiw*] the third day of the week
- Tues-days** (-déz, -dāz) *adv.* on or during every Tuesday
- tu-fa** (tóo'fá, -tyóob') *n.* [It. *tufa* < L. *tofus*] a porous rock formed of calcium carbonate, etc. deposited by springs —**tu-fa'ceous** (-fá'shás) *adj.*
- tuff** (tuf) *n.* [*< Fr.* < It. *tufa*, *tufa*] a porous rock formed from volcanic ash, dust, etc. —**tuff-a'ceous** (-á'shás) *adj.*
- tuf-fet** (tuf'at) *n.* [*< TUFF*] 1. a tuft of grass 2. [by misunderstanding of a nursery rhyme] a low stool
- tuft** (tuft) *n.* [OFr. *tufe*, prob. < L. *tufa*, helmet crest] 1. a bunch of hairs, feathers, grass, etc. growing or tied closely together 2. a) the fluffy ball forming the end of any of the clusters of threads drawn tightly through a quilt, etc. to hold the padding in place b) a decorative button to which

fat, ápe, car, ten, éven, is, bite, gó, hórñ, tóol, look, oil, out, up, for, get, joy, yet, chin, she, thin, then, zh, leisure, g, ring, a for u in ago, e in agent, u in unity, a in comply, u in focus; as in able (á'b'l); Fr. báil; é, Fr. cœur; ó, Fr. feu; Fr. mon; á, Fr. coq; ú, Fr. duc; r, Fr. cri; H. G. ich, kh, G. doch; †foreign; *hypothetical; < derived from. See inside front cover.